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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Mitsuhiro Agehari

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EXAMINER

TRAN, KHANH C

ART UNIT

PAPER NUMBER

2631

DATE MAILED: 11/29/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/540,289

Applicant(s)

AGEHARI, MITSUHIRO

Examiner

Khanh Tran

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 September 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2 and 4 is/are rejected.
- 7) ☒ Claim(s) 3 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 March 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

1. The Amendment filed on 09/26/2005 has been entered. Claims 1-4 are pending in this Office action.

Response to Arguments

2. Applicant's arguments filed on 09/26/2005 have been fully considered but they are not persuasive.

- Applicants argue on page 4 that "Examiner took the position that Van Nee shows maintaining the symbol duration T_s while changing the modulation scheme, the Applicants are unaware of any such teaching in Van Nee, and the Examiner has failed to identify any portion of Van Nee that shows it. This failure of Van Nee to teach this feature, when viewed together with the prior art mentioned in the background of the present application, makes clear that the rejection is untenable".

- *The Examiner* does not agree with Applicants' argument. The Examiner correctly took the position Van Nee shows maintaining the symbol duration T_s (the clock is kept constant) while changing the modulation scheme to increase the transmission rate in some aspects of Van Nee teachings.

As taught in column 3 lines 30-60, Van Nee teaches that to double the transmission rate of the scalable OFDM system the following operating parameters and/or characteristics of the system can be dynamically scaled or adjusted: the coding

rate, the carrier modulation scheme (e.g. doubling the number of bits per symbol per carrier), the symbol duration (e.g. halving the symbol duration), doubling number of carriers. In one particular embodiment (see column 4 lines 55-67), the transmitter increases the transmission rate by changing the symbol duration T_s while keeping the number of carriers N constant. In this particular embodiment, Applicants correctly point out that the clock is changed on the basis of a change in transmission rate.

However, Van Nee also teaches doubling the number of bits per symbol per carrier (e.g. different carrier modulation scheme) to double the transmission rate. In view of that, by doubling the number of bits per symbol per carrier, one of ordinary skill in the art at the time of the invention would have recognized that Van Nee keeps the symbol duration T_s constant. In this embodiment, the clock 17 as shown in figure 1 is constant. As result of that, Van Nee does teach the transmitter uses the same input clock for variable transmission rate, in which the transmitter employ different forward error correction coding schemes and/or variable modulation schemes for achieving various transmission rate.

Conclusion: in light of the aforementioned discussion, Van Nee teachings in some embodiments do address the claimed limitations "allow a transmission operation with a single input clock signal for any input modulation mode".

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-2 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Van Nee U.S. Patent 6,175,550 B1.

Regarding claim 1, Van Nee invention is directed to OFDM modulation schemes that are suitable to provide a wide range of information transfer rates in a wide range of physical environments. In column 3 lines 30-60, Van Nee teaches the transmitter can be dynamically adjusted to double the transmission rate of the scaleable OFDM system. According to Van Nee teachings, ***by changing the coding rate, carrier modulation scheme, or the number of carriers, the clock output of the clock 17 is the same input clock***. In light of Van Nee disclosures, the transmitter can use a single input clock signal with different forward error correction coding schemes and/or variable modulation schemes for increasing the transmission rate.

Figure 1 illustrates an OFDM transmitter 10 having signal circuitry 11 which receives a data stream of data bits from a data source 12. In column 4 lines 1-17, Van Nee discloses that variable data rate with OFDM transmitter are achieved by using different forward error correction coding schemes and or variable modulation schemes for each carrier as controlled by a dynamic control circuitry 15. In light of that, the variable modulation scheme corresponds to the claimed input modulation mode.

Van Nee does not show in figure 1 a data processing means for reading in data having a bit width suitable for the modulation system corresponding to the input modulation mode.

However, in column 3, line 66 through column 4, line 17, the coding block 14 receives the data stream and partitions the data stream into successive groups or blocks of bits for forward error correction coding. Hence, because the coding block 14 reads in the data stream according to forward error correction coding schemes and/or variable modulation schemes for each carrier, one of ordinary skill in the art at the time of the invention would have recognized that the coding block 14 performs equivalent function of the claimed data processing means for reading in data having bit width suitable for the forward error correction coding schemes and/or variable modulation schemes for each carrier.

As recited above, the coding block 14 receives the data stream and partitions the data stream into successive groups or blocks of bits for forward error correction coding. In column 4 lines 40-60, the blocks of coded data bits are input into N-points complex Inverse Fast Fourier Transform (IFFT) 16, where N is the number of the OFDM carriers. The IFFT 16 is performed on blocks of $2N$ coded data bits received from the coding block 14. Hence, the coding block 14 and IFFT 16 correspond to the claimed coding means for performing coding processing parallelly for the data read in by the coding block 14.

The output of the IFFT 16 is parallel-to-serial converted to produce an OFDM symbol. The RF transmitter 22 transmits the OFDM symbol through an antenna

24 in accordance with the forward error correction coding schemes and/or variable modulation schemes for each carrier at selected data rate. Clearly, each combination of coding scheme and modulation scheme produces different transmission data rate.

Regarding claim 2, as recited in claim 1, the coding block 14, including a data processing section in the front end to read in data, receives the data stream and partitions the data stream into successive groups or blocks of bits. Van Nee does not show explicitly a transmission memory for storing transmission data of m-bit strings and a memory for temporarily storing the data of n-bit strings as claimed. As well known in the art, data is read in and always buffered at the front end. Hence, as would be appreciated by one of ordinary skill in the art, the coding block 14, as taught by Van Nee, would also include a buffer (or memory) large enough to hold transmission data of m-bit strings. As recited above, the coding block 14 partitions the data stream into successive groups or blocks of n-bits. Evidently, the coding block 14 converts data of m-bit strings into groups or blocks of n-bit strings to be used for coding processing. The coding block 14 would inherently include a memory for temporarily storing the data of n-bit strings.

Regarding claim 4, the control circuit 15, shown in figure 1 (column 4, line 58 through column 6, line 10), scales operating parameters and characteristics by the controlling the clock 17 to adjust the time base clock. Clearly, the control circuit 15

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dynamically determines the transmission timing as claimed. The blocks of coded data bits are input into a complex IFFT 16 for producing an OFDM symbol. Hence, the complex IFFT 16 as taught by Van Nee corresponds to the modulation data allocation circuit as claimed in the patent application. Lastly, a RF transmitter 22 transmits the modulation data according to the time base clock.

Allowable Subject Matter

5. Claim 3 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Khanh Tran whose telephone number is 571-272-3007. The examiner can normally be reached on Monday - Friday from 08:00 AM - 05:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad Ghayour can be reached on 571-272-3021. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

KCT

Khanh Cong Tran

11/25/2005